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1: J Anim Sci. 1995 Nov;73(11):3341-50.

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J Anim Sci

Influence of dietary beta-glucan on growth performance, nonspecific immunity, and resistance to Streptococcus suis infection in weanling pigs.

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Three experiments, using 344 pigs, were conducted to evaluate the influence of beta-glucan on growth performance, neutrophil and macrophage function, haptoglobin production, and resistance to Streptococcus suis challenge in weanling pigs. In Exp. 1, 144 pigs were used to evaluate the influence of .1% dietary beta-glucan in a soybean meal- or milk protein-based diet on growth performance and neutrophil function. Pigs fed beta-glucan from d 7 to 14 after weaning had lower ADFI ($P < .01$) and, although not significant, ADG was lower for pigs fed beta-glucan than for pigs fed control diets. However, no differences were observed in growth performance or neutrophil function for pigs fed control or diets containing beta-glucan from d 7 to 35 after weaning. Experiment 2 was a 28-d growth assay in which pigs were fed a diet with or without .1% beta-glucan, containing 7.5% spray-dried plasma protein and 25% dried whey from d 0 to 14 after weaning. Pigs then were fed corn-soybean mealbased diets containing 2.5% spray-dried blood meal and 10% dried whey. No differences in growth performance were observed. Experiment 3 was a 35-d assay to evaluate growth performance, neutrophil and macrophage function, and plasma haptoglobin concentration. Pigs were challenged on d 28 postweaning with intravenous *S. suis*. In Exp. 3, pigs were fed diets without or with .025 or .05% beta-glucan. Dietary beta-glucan did not influence neutrophil or macrophage function. However, pigs fed diets containing .025% beta-glucan had increased ($P < .05$) ADG and ADFI and were heavier ($P < .05$) on d 28 after weaning than pigs fed the control diet. No differences in feed efficiency (G/F) were detected between treatments. Pigs fed beta-glucan had decreased ($P < .10$) plasma haptoglobin on d 14, 21, and 28 after weaning. However, Fisher's Exact test revealed that more ($P < .04$) pigs fed a diet containing .025% beta-glucan died by d 12 after challenge with *S. suis*. In

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conclusion, these data suggest the existence of a complex interaction involving growth performance and resistance to *S. suis* in pigs fed .025% beta-glucan.

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